Lifestyle risk factor modification in midlife women with type 2 diabetes: theoretical modelling of perceived barriers

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ABSTRACT

Objective

The aim of this paper is to propose a 'Perceived barriers and lifestyle risk factor modification model' that could be incorporated into existing frameworks for diabetes education to enhance lifestyle risk factor education in women.

Setting

Diabetes education, community health

Primary argument

'Perceived barriers' is a health promotion concept that has been found to be a significant predictor of health promotion behaviour. There is evidence that women face a range of perceived barriers that prevent them from engaging in healthy lifestyle activities.

Despite this, current evidence based models of diabetes education do not explicitly incorporate the concept of perceived barriers. A model of risk factor reduction that incorporates 'perceived barriers' is proposed.

Conclusion

Although further research is required, current approaches to risk factor reduction in type 2 diabetes could be enhanced by identification and goal setting to reduce an individual's perceived barriers.

INTRODUCTION

Type 2 diabetes is a significant cause of morbidity and mortality in Australian women (Australian Institute of Health and Welfare 2010). An important part of diabetes education includes providing information and goal setting to address lifestyle risk factors including smoking, nutrition, alcohol and physical activity (Colagiuri et al. 2009).

'Perceived barriers' is a theoretical construct that is described in a number of health promotion models and social-cognitive theories including the health belief model (Becker et al. 1977) and the health promotion model (Pender 1982). There is substantial evidence from research conducted over a number of decades that 'perceived barriers' are a significant predictor of health promoting behaviour (Pender 2006) and that women face a range of environmental, social and barriers that prevent them from engaging in healthy lifestyle activities (Gatewood et al. 2008; Osuji et al. 2006; Perry, Rosenfeld, and Kendall 2008; Wilcox et al. 2003; Williams et al. 2006). Despite this evidence, current evidence based guidelines for lifestyle risk factor modification in type 2 diabetes do not explicitly incorporate the concept of barriers or how to overcome barriers.

This paper proposes that the concept of perceived barriers to lifestyle risk factor modification could be incorporated into existing frameworks for diabetes education to enhance lifestyle risk factor education in type 2 diabetes.

LITERATURE REVIEW

Type 2 diabetes poses a significant health issue for the international and Australian community which has been identified as a priority area for prevention and management policies and strategies (National Health Priority Action Council 2006; World Health Organisation 2008). In 2005 an estimated 1.1 million people worldwide died from diabetes and in 2009, there were around 200 million people with type 2 diabetes (World Health Organisation 2009). Recent data from the

Australian Institute of Health and Welfare (AIHW) indicates that the prevalence of diabetes in Australia has trebled since 1989 – 90, however current figures do not represent the real prevalence as the illness often remains undiagnosed (2010). In women, the prevalence of type 2 diabetes increases markedly after the age of 45 years (Australian Institute of Health and Welfare 2008) and in 2007 was the seventh highest cause of death in women over 65 years of age (Australian Institute of Health and Welfare 2010).

In 2007, a total of 13,101 (9.5%) of all Australian deaths were attributable to diabetes, with predictions that type 2 diabetes will be the leading cause of disease burden by 2023 (Australian Institute of Health and Welfare 2010). Diabetes, as an underlying cause of death, is strongly associated with other causes of death including coronary heart disease, kidney disease, heart failure and stroke (Australian Institute of Health and Welfare 2010).

It is estimated that 80% of type 2 diabetes is preventable primarily through a healthy diet and regular moderate exercise (World Health Organisation 2009) and there is evidence that interventions that target these modifiable risk factors can reduce the relative risk of developing type 2 diabetes in at risk individuals (Lindström et al. 2003; Lindström et al. 2006; The Diabetes Prevention Program Research Group 2002; Tuomilehto et al. 2001). Lifestyle education about modifiable risk factors especially physical activity and nutrition is an essential component of self-management education for type 2 diabetes with evidence that it improves diabetic control and reduces short and long term complications (Colagiuri et al. 2009; Eigenmann and Colagiuri 2007).

Health promotion has been described by WHO as “the process of enabling people to increase control over the determinants of health and thereby improve their health” (1986). WHO’s *Global Strategy on Diet, Physical Activity and Health* (World Health Organization 2005) targets chronic diseases such as type 2 diabetes and recommends health promotion activities and strategies should focus not only on social and environmental risk factors but also individual behaviour change to address risk factors. In this context, lifestyle risk factor modification in type 2 diabetes education could be described as health promotion.

Perceived barriers is a health promotion concept first clearly described in the health belief model (HBM) (Becker 1974) developed in the 1950’s and 1960’s by social psychologists to explain the failure of people to participate in public health programs such as immunisation and tuberculosis screening in the United States of America. In the HBM perceived barriers are obstacles or impediments to taking action in response to a perceived threat of illness which influence whether or not action is taken (Becker et al. 1977). In a review of studies conducted in the 1970’s and 80’s that

used the HBM, of all the concepts measured, perceived barriers were reported to be the single most powerful predictor of health promoting behaviour across all studies and behaviours (Janz and Becker 1984). Pender's health promotion model (HPM) was developed in the early 1980's with the aim of integrating nursing and behavioural science theory to promote high level personal health and well being (Pender 1982, 2006; Pender, Murdaugh, and Parsons 2010). The HPM is multidimensional and reflects WHO principles of health promotion and also incorporates constructs from social-cognitive theory such as self-efficacy, and from the health belief model the concept of perceived barriers. *Perceived barriers* have been defined by Pender and colleagues as:

"real or imagined…perceptions concerning the unavailability, inconvenience, expense, difficulty, or time consuming nature of a particular action…often viewed as mental blocks, hurdles, and personal costs of undertaking a given behaviour…loss of satisfaction from giving up health-damaging behaviours…may also constitute a barrier" (Pender 2006, p. 53).

In a review of studies using the HPM as a theoretical construct, 79% provided evidence that perceived barriers are important determinants of health promoting behaviour (Pender 2006). In particular there are a number of studies where barriers to action have been found to be significant predictors of health promotion behaviour especially exercise behaviour (Jones and Nies 1996; Kaewthummanukul et al. 2006; Moore et al. 2003; Osuji et al. 2006; Stuifbergen, Seraphine, and Roberts 2000).

There is evidence that women face a range of barriers that prevent them from engaging in healthy lifestyle activities. Much of the research has been conducted in the United States of America (USA), where studies have explored the perceived barriers for well African American women with evidence that barriers of time, fatigue, family responsibilities, physical exertion, and motivation are significant (Jones and Nies 1996; Wilcox et al. 2003; Wilcox et al. 2005; Wilcox et al. 2002; Williams et al. 2006). Other studies in the USA have explored the barriers to exercise in minority group women such as Latina and American Indian women, with similar themes emerging with the most common barriers being time, fatigue, lack of energy, role responsibilities and personal health factors (Heesch, Brown, and Blanton 2000; Juarbe, Turok, and Perez-Stable 2002). Perceived personal and environmental barriers to physical activity and health promoting activity in rural women have been found to include fatigue, lack of time, bad weather, no energy and no motivation (Osuji et al. 2006; Paluck et al. 2006). Barriers to risk factor modification in women without a history of coronary heart disease have been explored with a sub-sample of women in the 'Wisewoman' project, with women who fully participated in a health promotion program having significantly fewer barriers to attendance than other participants who had minimum or no program participation (Gatewood et al. 2008). Perceived

barriers to health promotion, smoking history, family history of coronary heart disease and knowledge of coronary heart disease were predictors of health promotion behaviour in a group of women who had low risk factors for coronary heart disease (Thanavaro et al. 2006).

In the Australian context, a recent mixed method Queensland study used questionnaire and interviews to investigate exercise and dietary behaviour change in rural and urban midlife women (Anderson 2008). In this study, which focused on self-efficacy, 29 participants were interviewed about facilitators and obstacles to change. The main obstacles identified were work commitments, care giving commitments, illness, and injury.

Studies that have explored the perceived barriers for women with a chronic disease are fewer in number than those exploring barriers in well women. However, most reported barriers are similar: time, cost, lack of energy, safety, and social support (Crane and McSweeney 2003; Mosca, McGillen, and Rubenfire 1998; Perry, Rosenfeld, and Kendall 2008). Other barriers, reported by women with a chronic disease, relate to specific diseases such as osteoarthritis, multiple sclerosis, and cardiovascular disease. They include: pain, other medical illnesses, fear of falling, and cardiac symptoms (Crane and McSweeney 2003; Pierce 2005; Shin et al. 2006).

Work by Becker and colleagues in the early 1990's led to the development of a scale to measure barriers to health promotion activities in people with disabilities (Becker, Stuifbergen, and Sands 1991; Stuifbergen and Becker 1994). More recently, research has investigated perceived barriers to health promotion activities in women with multiple sclerosis, polio, post-polio syndrome, and fibromyalgia, with a number of these studies reporting perceived barriers as a significant predictor of health promotion behaviour (Beal, Stuifbergen, and Brown 2009; Becker and Stuifbergen 2004; Stuifbergen et al. 2003; Stuifbergen, Seraphine, and Roberts 2000).

In Australia, a recent study explored the level and type of perceived barriers to healthy lifestyle activities in a sample of 22 midlife and older women with type 2 diabetes attending community health clinics with an average age of 66 years old (McGuire 2011). In this study barriers were measured using the Barriers to Health Promotion Activities Among Disabled Persons scale (BHADP) developed by Becker and colleagues (Becker, Stuifbergen, and Sands 1991; Stuifbergen and Becker 1994). The leading barriers reported by the women were: concern about safety; fatigue; lack of interest; lack of information about what to do and lack of time. The average total barriers score for this group of women with type 2 diabetes was similar to the level of barriers reported in women with physical disabilities such as multiple sclerosis and post-polio syndrome (Becker and Stuifbergen 2004). While this was a small study it provides some evidence that midlife and older women with

type 2 diabetes report a level and range of perceived barriers which impact on their ability to lead a healthy lifestyle.

DISCUSSION

At present in Australia, the *Outcomes and Indicators for Diabetes Education A National Consensus Position* incorporates best available evidence into a framework for diabetes education (Eigenmann and Colagiuri 2007). The framework includes indicators that contribute to improving knowledge and understanding of diabetes to promote self-management, self-determination and psychological adjustment in order to achieve the outcome of optimal physical health and cost effective care. 'Physical activity', 'appropriate eating' and 'risk reduction' are listed as indicator areas in the framework that contribute to self management of diabetes. In applying the risk reduction principle of this framework, the Diabetes Management in General Practice Guidelines for type 2 Diabetes refer to the assessment of "SNAP risk factors (Smoking, Nutrition, Alcohol and Physical Activity)" and the establishment of a lifestyle plan being an important part of educating a person with type 2 diabetes (Diabetes Australia 2009). The Australian Diabetes Educators Association which is involved in training and credentialing of Diabetes Educators also support and encourage the use of these evidence based guidelines outlined (Australian Diabetes Educators Association 2011)

There is no doubt that these frameworks and guidelines provide an approach to diabetes education that reflects the best available evidence about the key components of diabetes education. In terms of risk factor reduction in type 2 diabetes however, what does not seem to be explicitly emphasised is the importance of identifying the perceived barriers that prevent an individual from engaging in healthy activities. While not necessarily specific to health promotion in type 2 diabetes, there is evidence from studies using the health belief model and health promotion model that perceived barriers are an important determinant of health promotion behaviours. Further there is evidence that women face a range of barriers and that prevent them from leading a healthy lifestyle. In the Australian context there is some evidence that midlife and older women with type 2 diabetes also experience a range of perceived barriers that prevent them from taking care of their health. While there is no doubt that behaviour change to reduce lifestyle risk factors for type 2 diabetes is complex, it is argued that risk factor modification could be improved by incorporating the assessment of perceived barriers. Once individual barriers are assessed and identified information and goal setting to reduce their impact on the individual could be undertaken.

Figure 1 is a diagrammatic representation of a lifestyle risk factor modification and perceived barriers model. It is proposed that at the time that individual risk factors such as smoking, nutrition,

alcohol intake and physical activity are assessed, perceived barriers could also be thoroughly assessed. Healthy lifestyle behaviours can be encouraged through education and information and by realistic goal setting and by discussion of perceived barriers, awareness of barriers can potentially be improved and options explored to overcome them. For example, if a client has a low level of physical activity then education would be given about the benefits of regular exercise and personal goals set to promote an increase in physical activity. A client may express that lack of time is a barrier to increasing physical activity; once this has been clearly identified as an issue, options for reducing the barrier of time could be explored.

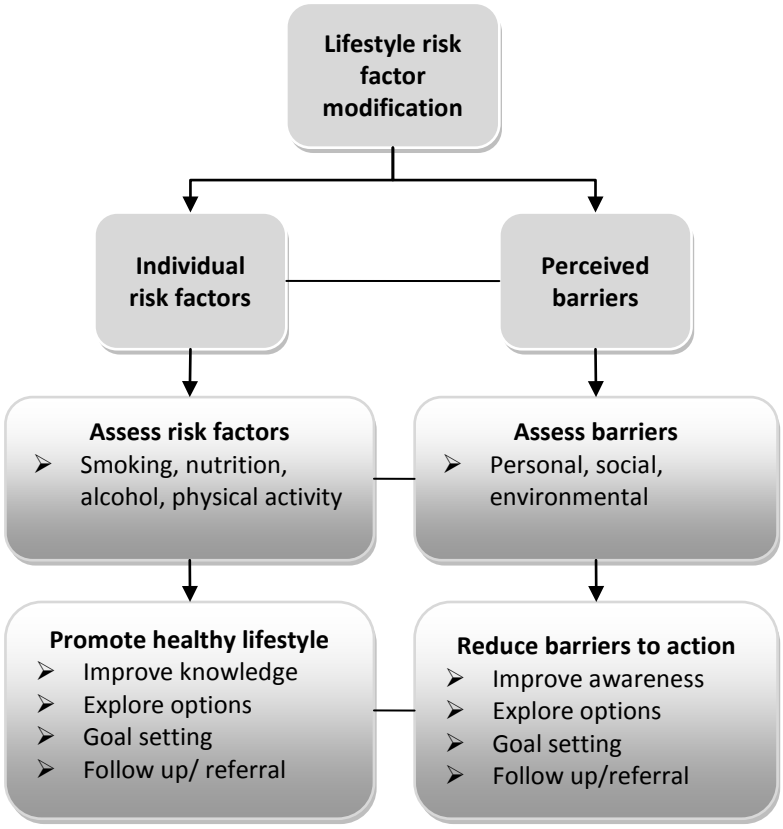

Figure 1. ***Lifestyle risk factor modification and perceived barriers model***

This model aims to provide a framework for lifestyle risk factor modification not only to improve client knowledge and commitment to reducing individual risk factors but to also improve awareness and commitment to overcoming perceived barriers that prevent women reducing risk factors. The model expands existing approaches risk factor reduction in diabetes education incorporating evidence from health promotion studies where perceived barriers have been found to be important

predictors of healthy lifestyle behaviour (Pender 2006). Further research is needed to test the validity of this model and the impact on risk factor reduction.

CONCLUSIONS

Type 2 diabetes places a significant burden on individual's and the community, including women. Lifestyle risk factor reduction is an important component of diabetes education that aims to improve diabetes control and reduce short and long term complications. Current approaches to risk factor modification do not explicitly incorporate the concept of perceived barriers, which is known to be a predictor of healthy lifestyle behaviour in women. This paper proposes a lifestyle risk factor modification and perceived barriers model which could potentially enhance identification and goal setting to reduce an individual's perceived barriers to healthy lifestyle behaviours.

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